Catalogue of American Amphibians and Reptiles.

Doan, T.M., A.M. Nowacki, and P.A. Roberts. 2012. *Dendrobates leucomelas*.

Dendrobates leucomelas Steindachner Yellow Banded Poison Dart Frog, Bumblebee Poison Dart Frog, Sapito Minero

Dendrobates leucomelas Steindachner 1864:260. Type-locality, "Columbien" [= Colombia]. Holotype, Naturhistorisches Museum Wien (NHMW) 19188, an adult, collected by J. Natterer in 1851 (not examined by authors). See **Nomenclatural History**.

• **CONTENT**. No subspecies are recognized.

• **DEFINITION**. *Dendrobates leucomelas* is a relatively large *Dendrobates* with a SVL ranging from 30.5–37.5 mm. The skin of the back is smooth while the posterior belly and ventral surface of the thighs are rugose (Silverstone 1975). The fingers are free and end in large discs that are truncate with converging margins. The first finger is shorter than the second and the disk is smaller than the others. The toes are also free but with smaller disks than on the fingers (Rivero 1961). *Dendrobates leucomelas* is 1 of 2 species of dendrobatids that lack an omosternum (Silverstone 1975). The dorsal coloration is largely black dominated by 3 broad yellow transverse bands, but can be greenish-yellow or orange in some populations (Lötters et al. 2007). The yellow bands typically contain black spots, bands, or intrusions (Silverstone 1975). In some areas the bands are orange or yellow, becoming greenish yellow at the extremities. The ratio of black ground color and colored dorsolateral bands varies (Fuentes and Rodriguez-Acosta 1997). Ventral surfaces are black with occasional lateral intrusion of yellow from the dorsal surface or a yellow spot (Rivero 1961). The limbs are yellow spotted with black (Silverstone 1975). The advertisement call of a male is a relatively loud, monotonous, but musical trill (Lötters et al. 2003). The trill can last from a few seconds to several minutes and serves as an advertisement call and as a courtship call (Summers 1992). The call consists of numerous (13–14 per second) pulsed, close-set notes that are similar in temporal structure and show slight upward frequency modification (Lötters et al. 2003).

FIGURE 1. Adult *Dendrobates leucomelas* from near Puerto Ayacucho, Venezuela (photograph by Carl J. Franklin).

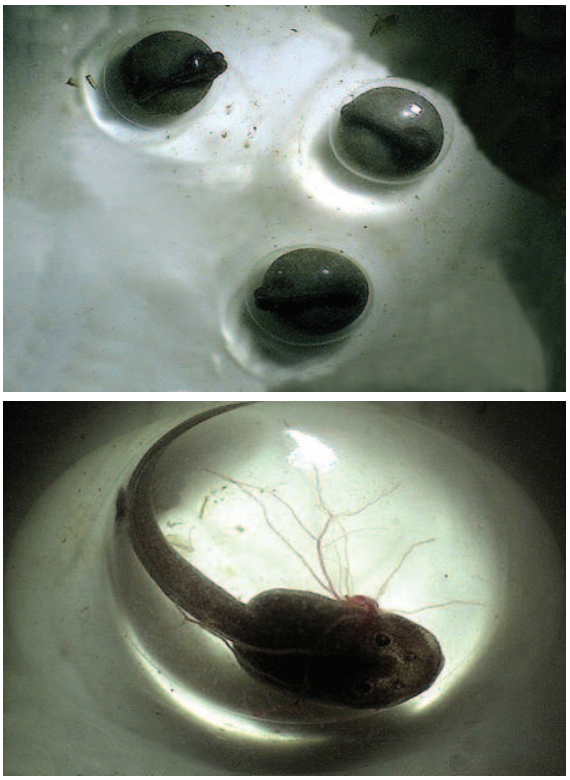


FIGURE 2. Eggs of *Dendrobates leucomelas* on day 5 (above) and day 15 (below) after oviposition in captivity (photographs by Perry A. Roberts).

• **DIAGNOSIS**. *Dendrobates leucomelas* and *Oophaga histrionica* are the only known dendrobatids that lack an omosternum, but this trait appears to represent convergent evolution, rather than a synapomorphy (Lötters et al. 2007). *Dendrobates leucomelas* can be distinguished by the presence of the wide, lightly colored transverse dorsal bands with intrusions and spots of the ground color. *Oophaga histrionica* typically lacks transverse dorsal bands and when they are present they do not have intrusions of the ground color (Silverstone 1975).

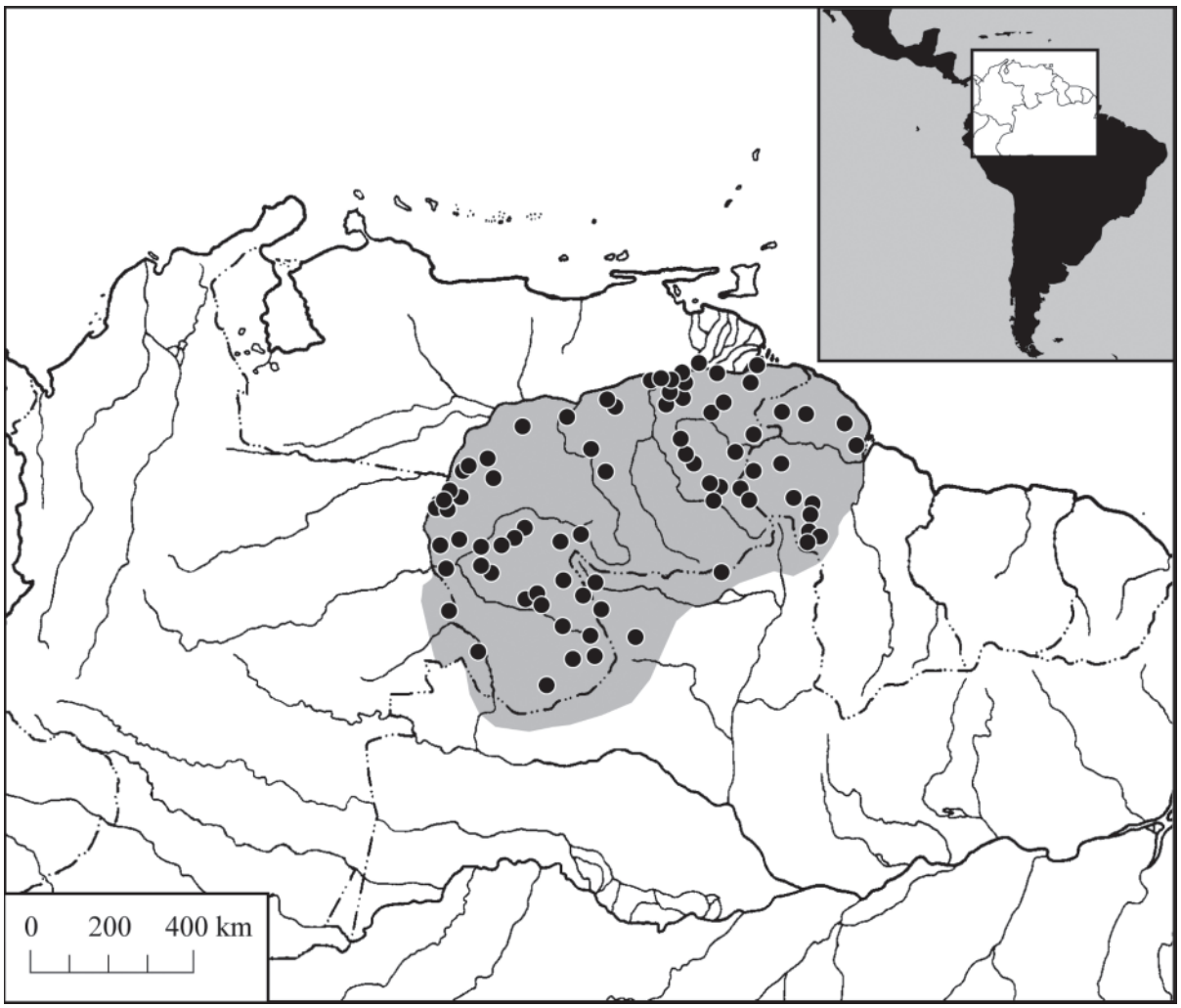
• **DESCRIPTIONS**. Forsman and Hagman (2006), Fuentes and Rodriguez-Acosta (1997), Lötters et al. (2007), Rivero (1961), and Silverstone (1975) provided descriptions of the coloration of *Dendrobates leucomelas*. Silverstone (1975) also described the skin texture and a little osteology. There are no published detailed descriptions of juveniles of this species. Lötters et al. (2003) described the advertisement call of a male and included an oscillogram and an audiospectrogram. Zimmerman and Zimmerman (1988) also presented an audiospectrogram.

• **ILLUSTRATIONS**. A picture of two adults and dia-

FIGURE 3. Metamorph of *Dendrobates leucomelas* on day 71 after oviposition in captivity (photograph by Perry A. Roberts).

grams of different spot patterns are provided by Fuentes and Rodriguez-Acosta (1997). Lötters et al. (2007) provided a series of color photographs depicting the varying color patterns of the species. Additional color photographs are in Bartlett (2003), Canela and Vásquez (1998), Gorzula and Señaris (1998), Gremone et al. (n.d.), Hoffmann-Röder and Krause (2004), Obst et al. (1988), Santos (2009), and Walls (1994). A color illustration appeared in Cogger and Zweifel (1998). A black-and-white photograph is provided by Duellman and Trueb (1986). Hoffmann-Röder and Krause (2004) provided structural diagrams of skin alkaloids. To date, there have been no published pictures of eggs or tadpoles.

• **DISTRIBUTION**. This species' range lies primarily in Venezuela. It is known from the western portion of the Guayana Shield and south, from the Guianan Orinoco drainage of Venezuela, north to the Río Orinoco, in the Bolívar and Amazonas States. The range expands south into northern Brazil (Roraima State), east to the Essequibo River in Guyana (Mazaruni Potaro District) and west into eastern Colombia (Guainía and Vichada Departments)



MAP. Distribution of *Dendrobates leucomelas*. The type-locality in eastern Colombia is unknown; dots mark known locality records. The indicated range is approximated.

(Lötters et al. 2007). Barrio and Fuentes (1998) provided a detailed map of the distribution of *D. leucomelas* in Venezuela; other maps can be found in Haffer (1979) and Hoogmoed (1979). It has been collected at elevations of 50–800 m (Silverstone 1975). The species inhabits lowland tropical moist forest and lowland tropical wet forest life zones (Silverstone 1975). It also persists in gallery forest within savannas (Hoogmoed and Gorzula 1979).

• **FOSSIL RECORD**. No fossils are known.

• **PERTINENT LITERATURE**. Relevant references are listed by topic: **behavior** (Pröhl 2005), **biochemistry** (Daly et al. 1978; de Magistris et al. 1985; Hoffmann-Röder and Krause 2004; Jackson 2009), **captive husbandry** (Forzán et al. 2008; Nogge 2004; Slavens and Slavens 1998; Weldon et al. 1993; Zimmermann 1989; Zimmermann and Zimmermann 1980, 1992, 1994), **conservation** (Goka et al. 2009; Gorzula and Señaris 1998; La Marca and Azevedo-Ramos 2004; Lawler et al. 2010; Lucy Hou et al. 2006; Molina et al. 2009; Nijman and Shep-herd 2010; Rawson et al. 2011; van Andel et al. 2003; Zimmermann and Zimmermann 1992, 1994), **diet** (Silverstone 1975), **disease** (Koichigo et al. 2009), **distribution** (Barrio and Fuentes 1998; Duellman 1997, 1999; Fuentes and Rodriguez-Acosta 1997; Gorzula and Señaris 1998; Haffer 1979; Hoogmoed 1979; Lutz and Kloss 1952; Rivero-Blanco and Dixon 1979; Ruiz-Carranza et al. 1996; Silverstone 1975; Twomey and Brown 2008), **ecology and natural history** (Barrio-Amorós et al. 2010; Gorzula and Señaris 1998; Han 2008; Heyer and Barrio-Amorós 2009; Hoogmoed and Gorzula 1979; Lötters et al. 2007; Rivero 1961), **morphology** (Glaw and Vences 1997; Rada de Martínez and Bello de López 1996; Rivero 1961; Silverstone 1975), **parasitology** (Schrenzel et al. 2010), **phenotypic variation** (Fuentes and Rodriguez-Acosta 1997), **reproduction** (Brown et al. 2010; Forsman and Hagman 2006; Summers 1992), **speciation** (Noonan and Wray 2006), **systematics and phylogeny** (Clough and Summers 2000; Darst et al. 2005; Grant et al. 2006; Hagman and Forsman 2003; Jungfer and Böhme 2004; Lötters et al. 2003; Noonan and Gaucher 2006; Perez-Peña et al. 2010; Roberts et al. 2006; Santos 2009; Santos et al. 2003; Summers 1989; Summers and Clough 2001; Summers and Earn 2008; Summers et al. 1999; Symula et al. 2001, 2002; Toft 1995; Vences et al. 2000; Wollenberg et al. 2006; Zimmermann and Zimmermann 1988), **toxins** (Aponte 2009; Daly et al. 1987, 2003; Saporito et al. 2004), **vocalization** (Erdtmann and Amézquita 2009; Lötters et al. 2003; Zimmermann and Zimmermann 1988), and **zoogeography** (Reinthaler and Fistar 2002; Rivero 1964, 1967, 1971).

• **NOMENCLATURAL HISTORY**. Considerable confusion exists regarding the authority to whom this taxon should be credited. Steindachner (1864) attributed the name *Dendrobates leucomelas* to Fitzinger without providing a published reference and listed *D. leucomelas* as a synonym of *D. tinctorius*. Silverstone (1975) claimed that the species should be attributed to Fitzinger. Hoogmoed and Gorzula (1979) explained that because Fitzinger never published a description and did not work with Steindachner, and because Steindachner (1864) did provide a description, the author of the species should be Steindachner (1864). Hoogmoed and Gorzula (1979)'s clarification was followed by Barrio Amoros (1998), Roberts et al. (2006), and Lötters et al. (2007), but was not followed by Häupl et al. (1994).

• **ETYMOLOGY**. The species name, *leucomelas*, is Latin for "with white and black," presumably a reference to the the color pattern consisting of light and dark bands.

• **ACKNOWLEDGMENTS**. We thank Carl J. Franklin for his photograph of an adult *Dendrobates leucomelas*.

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